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The Tech.

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THE revision of the schedule of studies for the different courses, which is now in progress, will be awaited with interest and with some solicitude by the members of the upper classes, especially since, as we have been informed, it

is proposed to introduce some radical changes therein.

That more work has in the past been laid out than could properly be done by the average hard-working class-man is undoubted, but we think the wrong remedy is to be applied, when, to offset this, it is proposed to limit the studies which may be taken by a regular student after the first year, strictly to those laid down in the scheme for his course.

To cut off the electives in the studies here at the Institute is to strike at one cause of its

success. A man comes to the Institute not solely for what he will learn from his chosen course (for it is impossible so to make up a course as to suit the multitudinous wants of practical life), but for what he can learn by a judicious selection from that and from others outside it.

For a boy of sixteen entering here it may perhaps be well to have him confined to a certain definite course of study; but for a young man of twenty years or perhaps more, who is able to judge discriminatingly then, if he ever will be, as to what he wants instruction in to best fit him for his future work, it would be a great pity to so narrow down his chances for education; and if he cannot get what he wants here he will go elsewhere. Advantages would certainly result from having the Tabular View accurately represent the student's actual work; but we should be very sorry to see all opportunities for work outside the courses taken away. The Institute is not the place for men to while away their time in, as so many do at college, but is a place for earnest work; and, as regards electives, no man who comes here for solid advantage will take up more than he can handle; but we think every man is his own best judge of how much extra work he can do with credit to himself.

We could adduce several instances in evidence of the above statements, where fellows, who have seen practical work and found out where their ignorance is a great bar to success and progress, have come to the Institute to make it good. These are the men which this institution aims to benefit largely, and while many have to take studies for which they do not care and can see no practical use, merely for the sake of getting their degree, it seems only fair that opportunity should be given to make up for this where possible.

AN event is to take place on Saturday next that concerns so intimately the welfare of THE TECH, and should command so fully the interest of all its friends, that it deserves more than the brief notice of the bulletin board. THE TECH has now nearly completed its third year. Its existence thus far, though not perhaps precarious, has passed in a rather haphazard, hand-to-mouth fashion. In many respects it has proved successful; in many it is still improving; it has, we believe, supplied a want, and is conceded by all to be a good thing. In view of these and other considerations, the present Board of Directors have felt that the time has come to place it upon a little more permanent basis, to give it, as far as may be, a degree of continuity which it now lacks.

The only external limitations upon the power of the Board, which is charged by the school with the execution of important trusts, are contained in an exceedingly brief committee report approved by one of the early mass meetings incidental to the inception of the paper. Such a charter is, of course, utterly inadequate to guide and govern its management now, nor was it intended so to do. The Board can contract debts up to the utmost limit of its official credit, and leave them to be paid by the school, if at all.

An attempt to remedy this defect has been made by the present Board. They have drawn up the first and only constitution of THE TECH, and so far as its workings have been studied, they are satisfactory. But it was felt that no such constitution would be binding upon a future board, or give organic continuity to the papers until it should be ratified by the source of power, — the school as a whole. For this vitally important purpose the meeting has been called. In accordance with an article of the present provisional constitution, it is also proposed to give a brief general outline of the work and progress of THE TECH for the last year, and of its prospects for the next.

The importance of such a meeting is apparent without argument, but we may add, for illustration, that if such action had been taken

one year ago, the financial status of the paper would be far better to-day.

To one who is not so familiar as we are with the apathy of the average Institute student to any and all public enterprises, it would seem that business so important, affecting so directly the interests of the students should draw a large and earnest meeting. Would that it might. We, as a school, are sadly lacking in public spirit, in *esprit de corps*. We are merely "economic men," competing each for his own selfish, personal ends. Let us take a broader view of our rights and our duties. Each one recognizes the expediency, the necessity of certain public actions; only let him act according to the logical sequence — that *he* must do *his* share towards attaining the end sought. We bespeak for the meeting a full attendance, and hope that no slight cause will keep away any one interested in the growth and prosperity of THE TECH.

IT is very commonly felt that the examinations as posted follow one another too quickly, with no intermission for a week. At Cambridge the students feel overworked if they have three in a week. A man cannot do himself justice where he has to pass a three and a half hours' examination every day for a week and study the remaining time to prepare himself. But alas! what can we do about it?

WE are glad to learn from President Walker of the two new degrees to be instituted the coming year.

These are to be the degree M. S., or Master of Science, to be taken after a post-graduate course of one year, and the degree Ph. D., or Doctor of Philosophy, to be taken on the successful completion of two years of post-graduate study. We are not yet informed as to the precise conditions under which these degrees may be taken, but only know that they are to be open to candidates from all the departments, and are to be equivalent in significance to the degrees of

M. A. and Ph. D. conferred at Harvard and other colleges of the first rank in our country.

Heretofore, after attaining to the degree of S. B. we have had, it is true, another held out to us as a reward for future efforts, but such have been the conditions stipulated, involving as they did years of the hardest labor, that there has been, it is said, only one man in the life of the Institute who was courageous enough to try for this degree, and, sad to relate, he failed.

We congratulate ourselves that something more is now held out to us which is within our compass, and still difficult enough of attainment to carry considerable distinction with it.

Five scholarships for graduates of the Institute, to which reference is made in the catalogue, will be given to the deserving candidates for the degrees M. S. and Ph. D., and we consider the arrangement in every respect a good one, except that, contrary to the general custom, the privilege of studying for the post-graduate degrees is debarred from our instructors, who, in general, are made up of the best material the Institute affords.

THE nearness of the close of the term suggests the advisability of the election of the new board of directors for THE TECH. So much depends on a sure and early start in such an undertaking as this that the new board should be appointed at once, in order that they may in turn choose the board of editors; who, by such a procedure, would have the whole of the coming vacation in which to prepare for their next term's work.

Eighty-Four's Theses.

THE following titles of theses have been submitted to the Faculty by members of the graduating class:—

CIVILS.

Design for a Breakwater at Sandy Bay, Rockport, Mass., Charles Clarence Bothfeld, Newton, Mass.

System of Sewers for the Town of Clinton, Mass., Walter Frank Carr, A. B., Clinton, Mass.

Design for a Trestle Highway Bridge at Chapel Station, Mass., Christopher James Carven, South Boston, Mass.

Design for a Bridge for proposed Ferry Landing at East Boston, Mass., George Le Roy French, East Boston, Mass.

Design for a Wooden Howe Railroad Bridge, Frederic Morton Stuart, Newton Centre, Mass.

Design for the Roof Construction for a Railroad Station, Francis Charles Williams, Jr., Roxbury, Mass.

MECHANICALS.

Relation of Temperature and Pressure of Saturated Steam, Charles Brooks Appleton, Boston, Mass.

An Application of the Steam Engine Indicator to a Locomotive, Henry Furlong Baldwin, Waterbury, Md., and Abbott Lawrence Rotch, Boston, Mass.

Result of Certain Experiments with the Engines in the Mechanical Engineering Laboratory of the Institute, Alfred Lyon Fitch, Chicago, Ill.

Experiments on Belting, Arthur James Purinton, Boston, Mass.

Steam Calorimetry, William Milton Whitney, Winchendon, Mass.

MINERS.

The Pan Amalgamation of Poor Silver Ores, Thomas Harris Bartlett, Portsmouth, N. H.

The Extraction of Silver from a lean Argenterous Psilomelane, Walter Hayes Bunce, Hartford, Conn.

Treatment of Lead Matter for Silver and Lead, Alfred Oliver Doane, Newtonville, Mass.

The Concentration of a Colorado Galena, Frank March Haines, Boston, Mass.

Treatment of a Silver Ore by Chlorination and Amalgamation, George Henry Heywood, Gardner, Mass.

Smelting of Copper Residue for Lead, Gold, and Silver by Parke's Process, David Alexander Lyle, U. S. A., Boston, Mass.

Steel-Mill Methods for the Estimation of Phosphorus and Sulphur, Philip Sidney Morse, A. B., Boston, Mass.

Smelting of Native Copper, Dean William Park, Newton, Mass.

Treatment of Copper Residue for Gold, Silver, Copper, and Lead, William Lewis Puffer, West Newton, Mass.

Included Copper in Calumet Sand, William James Rich, Pembroke, Me.

Water Jacket Furnace, Franklin Batchelder Richards, Somerville, Mass.

Concentration of a Copper-Lead Matte, Charles Snelling Robinson, Wareham, Mass.

Metallurgical Treatment of the Vershire Copper Ore to a High Grate Matte, Theodore Winthrop Robinson, Wareham, Mass.

Extraction of Gold and Silver from Copper Residue, Alfred Stebbins, Jr., Boston, Mass.

Refining of Black Copper, Elliot Torrey Sturgis, Boston, Mass.

ARCHITECTS.

Design for a Church and Theological School, Samuel Marshall Ilsley, Milwaukee, Wis.

CHEMISTS.

Action of Isobutyric Acid on Aniline, Fred. Leslie Bardwell, B. S., Minneapolis, Minn.

The Separation of the Phosphates of Calcium, Henry Alger Boardman, Melrose, Mass.

Experiments upon the Freezing of Dilute Saline Solutions, Alice Irving Brown, Roxbury, Mass.

The Ethyl Tolnidines, Roscoe Leland Chase, Lowell, Mass.

Action of the Halogen Acids upon Allyl Alcohol, Augustus Herman Gill, Canton, Mass.

Oxidation of Benzol, James Gordon Holder, Lynn, Mass.

Nickel Ore, George Frederic Knapp, Cambridge, Mass.

Etherification, Charles Oliver Prescott, Westford, Mass.

Action of Neutral Salts on Metals, Josiah Peterson Ryder, East Boston, Mass.

Action of Phosphorous Bromide on Isobutyl Alcohol, Amy Maria Stantial, Melrose, Mass.

Determination of Nitrogen in the Wet Way, Nahum Ward, Roxbury, Mass.

The Story of a Supernumerary.

IT was my first year at college. I had been brought up in the strict and proper way in which many New England boys are, and as a consequence there was a good deal in the world for me to see. I was almost afraid to enjoy myself thoroughly for fear of doing wrong, but this feeling gradually wore away. My friends had fortunately been well chosen, thanks partly to my family and partly to my natural tastes. One evening some of the fellows suggested that we go in town to the theatre to see the great spectacular presentation of "Cosmos," which was then attracting crowded houses. The project was hailed with a chorus of assent and was modified only in that we decided to go on as "supes" in order to see the interesting machinery behind the scenes, — in fact, to see how they managed things in general behind there. We went, and by great good fortune and a little judicious talking, my chum and I got a good position behind the front wings and had no work to do, while the rest of the fellows were slaving around as wrecked sailors in baggy trousers, or as porters to put baggage on the steamer. One fellow was immensely tall, and by a queer freak of fate he had on a suit which was made for a man four sizes smaller. We had a very good time all in all, — oh, I had almost forgotten to mention that there was a ballet connected with the performance.

After the performance was ended, we went home, but Alan Duane and I had foxily secured yellow tickets to go on another night. At the appointed hour we presented ourselves, were admitted, and I soon after was drafted for a sailor boy, but Alan escaped and disappeared, I know not where (he afterwards said he had enjoyed the evening's entertainment). I went down to put on the costume with my brother sailors and there gave the "boss of the supes" a couple of cigars which I had previously carefully selected for the purpose in order to secure his co-operation and to get on his right side; but I think they must have been strong or something and have embittered his character, — at least I thought so a little later on. We were all packed

in at one side, and, at a given signal, were rushed out on deck in open mutiny on board a burning steamer.

Carried away by the excitement of the play and occasion, I managed to get out at the front of the stage, in fact, played the part of conspirator-in-chief without the notes, and was so daring as even to boldly threaten the officer who had a loaded pistol and who was supposed to terrify the crew into obedience. I did n't terrify at all well, and came very near getting my eyes put out from a discharge of black powder.

I am confident that my fall thereafter upon the stage was superbly done, but unfortunately, not being much accustomed to stage demeanor, I had fallen in the wrong place, and the curtain came down on the middle of back, my feet being outside and my head within. The dead man next me intimated in a stage whisper that I had better get out from under the curtain, which I proceeded to do, endeavoring to make it appear as natural a movement as a dead man could be expected to make. I did n't move nearly as much as Salvini does at the end of "Othello"; that always struck me as a trifle over-done.

Quite satisfied with my acting, I rose up, only to receive a general "hauling over the coals"; first, from the hero who had hard work (he told me in vigorous language which it is needless to repeat here) not to shoot me in reality.

Then the "chief conspirator," whose role I had usurped, came down on me, but he was better natured about it. Then I went downstairs. The "master of the wardrobe" did not fill my ideal of the position. He spoke very plainly; among other things he mentioned excessive freshness as one of my attributes. I can scarcely recollect the connected narrative, there was so much repetition to his language, — some of it was very profane, too! I took off my things quickly. Oh, I remember a very tall marine from the Navy Yard who took my part (he came from Kentucky, and his father was a distiller — he took after his father, I think), and made a capital policeman. I was quite grateful on getting my overcoat and hat back, and amid

a few parting blessings and cursings I left the theatre a wiser if not a better man.

TH. P.

Incineration.

[Abstract of a paper in the Princeton Review for September.]

THE rapid increase of population in cities and the consequent extension of its limits has, as a matter of course, very much developed sanitary science; in fact, it has become absolutely necessary to devise some means for abating the evil of burying grounds in the midst of crowded cities. The pleasing illusion of the peaceful sleep of the grave is dispelled if we only examine into the loathsome processes of putrefaction continually going on in buried bodies until their final resolution into their elements. This process of decomposition is simply oxidation; our bodies are burned up sooner or later, whether we approve of cremation or not, and it is simply a matter of choice whether it shall take place in the clean glow of the crematorium in an hour, or be a process of twenty, fifty, perhaps a hundred years in the loathsomeness of the grave; the one certain fate for all is, however, "Ashes to ashes."

The products of the decomposition of the human body are, carbonic acid, carburetted hydrogen, sulphuretted hydrogen, ammonia, nitrous and nitric acids, and water, besides other offensive organic vapors and some non-volatile minerals; it has been ascertained that each human body generates annually about fifty cubic feet of carbonic-acid gas.

The normal atmosphere of cemeteries is sufficiently full of noxious vapors, but in the spring-time, when the opening earth releases the gases imprisoned during the winter, who can estimate the disastrous effects arising from breathing this air! The atmosphere of burying grounds is freighted with the germs of almost every form of zymotic diseases. Pasteur's experiments have proved that earth-worms bring to the surface myriads of bacteria from the bodies of the decomposing dead. The blood of animals dying of splenic fever, though dried and kept for years, and pulverized into dust, permits the

disease germs to survive with sufficient power to produce infection. The reappearance of the plague in 1828, the cholera in 1854, the yellow fever in 1858, is in each case to be traced to the upturning of the soil where were buried the victims of preceding inflictions.

We owe it to the generations to come to prevent, as much as in us lies, the recurrence of like deadly visitations.

The contamination of wells, springs, and water-courses in the vicinity of burial grounds is also a most alarming feature of the case. The water has a peculiar sparkling brilliancy, due to the very large proportion of nitrates and nitrites in solution, which tends to disarm any doubts as to its purity. But the London *Lancet* assures us that "it is a well-ascertained fact that the surest carrier of zymotic contagion is this brilliant, enticing-looking water."

And how can these various evils better be averted than by the safe, cleanly, decorous, and economical method of accomplishing in an hour precisely the same result as is accomplished in fifty or a hundred years by earth burial? and it does this in the purifying glow of the crematorium, free from all offensive accompaniments or evil effects. It is not nature's remedy retarded as in earth burial, but simply nature's remedy facilitated.

The process as conducted at Gotha by means of the Siemens apparatus is as follows: The body is borne into the chapel and placed in a catafalque which stands in front of the altar. The section of the chapel floor upon which the body rests constitutes the floor of a lift or elevator. As the funeral service proceeds, the elevator invisibly and noiselessly descends, bearing the body to the basement directly in front of the incinerator, which, by means of superheated air, has been raised to a white heat within, at a temperature of about 1,500° Fahrenheit. As the door of the incinerator is opened to receive the body the in-rushing cold air cools it to a delicate rose tint; and the body, resting on a metallic bed, covered with a cloth of asbestos, or of linen soaked in alum, passes over rollers into this bath of rosy light. Immediately

it becomes incandescent, in which condition it remains until incineration is complete. This requires about an hour per hundred pounds of the original weight. There remain only a few handfuls of pure pearly ashes, equivalent to about four per cent of the original. These are dropped by means of a lever into the ash-chamber below, and are drawn thence into an urn of terra cotta, marble, alabaster, or other suitable material, and returned by means of the elevator to the catafalque. The service or ceremony being now over, the friends of the deceased find the ashes just where they had last seen the body of the departed, and may bear them thence to the columbarium or mortuary chapel, or set them in the border and plant violets, hearts-ease, and forget-me-nots in them from year to year.

"And from his ashes may be made the violet of his native land."

No fuel or flame of foreign substance comes in contact with the body. The process is accompanied with no perceptible sound or smell or smoke. All the smoke and volatile products of combustion are passed through a regenerating furnace before being turned loose into the air, and are absolutely purified. There is scarcely an instance known of any one having witnessed the process as thus conducted who has not at once become a pronounced convert to cremation, whatever may have been his pre-existing prejudice.

Aside, however, from sanitary arguments are others in its favor. It would avert the danger of having the body stolen, as in the case of the late A. T. Stewart, and the Earl of Crawford, and to prevent which a guard surrounds, to this day, the tomb of Lincoln, and also that of President Garfield. It would, moreover, remove the very natural dread, amounting in many cases to absolute terror, of being buried alive. Numerous well-authenticated instances are on record of those who had been prepared for burial, even placed in coffins for interment, arising from a protracted coma, just in time to save themselves from burial. But what of the large number who arise not?

"To be buried alive," wrote Edgar Allen Poe, "is beyond question the most terrific of all extremes which have ever fallen to the lot of mere mortality."

The late Rev. Wm. Tennent, when yet a theological student at New Brunswick, was placed in his coffin for burial, — physicians and friends believing him to be dead. One particular personal friend, however, begged so persistently for postponement, that for more than four days after the time appointed for burial he was kept in the coffin, and finally revived and lived a useful life of many years. While cremation, as well as burial, forbids the hope of a return to active life in the flesh, it humanely prevents the possible agony of a return to temporary consciousness.

Another consideration in favor of cremation is the facility it affords for the preservation and transportation of the ashes of the deceased. Rev. Brooke Lambert, of England, not long since remarked: "I have lost three very dear kinsfolk in remote quarters of the earth, and I would give anything I could command if I could receive their ashes and keep them by me in a vase." Cremation ought certainly to be adopted by our military authorities, no less as a sanitary measure than as a matter of sentiment after a great battle.

The practical consideration of economy, though perhaps repugnant to the feelings, is nevertheless of moment to the multitudes of families in large cities who become shelterless and foodless on account of the expense entailed in the burial of their dead. The average cost of a funeral among the lower-middle classes in and about New York is not far from \$150, while the cost of cremation properly performed should not exceed \$40, with an additional expenditure of \$10 for an appropriate terra-cotta urn and a niche in the columbarium. But more than this, we find nearly four thousand acres of valuable land, eligible for building sites about New York, Brooklyn, and Jersey City, perverted from the use of the living to the abuse of burying the dead; while much of the adjacent land outside is practically rendered almost valueless, no one

wishing to live on the borders of a cemetery, and wisely so.

The objections urged against cremation are, briefly, first, the medico-legal argument that in any case of poisoning it would destroy the evidence thereof, and so offer a premium upon this class of crime. This is true to some extent, and is therefore an argument — not against incineration — but in favor of the precaution of a careful autopsy before cremation in any possibly doubtful case. All non-volatile mineral poisons would, however, remain in the ashes and would be more readily detected there than in the body itself.

It is further objected that cremation would be impracticable as a means of disposing of the dead of large cities, but those who are familiar with the crematories at Bombay and Brussels would not for a moment seriously entertain this objection.

Again, it is objected that "cremation is heathenish and barbarous." So is earth burial, and was so thousands of years before it became Christian burial. So eating, drinking, bathing, and sleeping are heathenish and barbarian practices, but we do not, therefore, refuse to eat, drink, bathe, and sleep.

Some have religious objections to cremation. They say it has no recognition in the Bible, forgetting that Saul and his sons were burnt. Others say that it will undermine the religious belief of mankind, little thinking that the same black mould which is turned up to bury the latest man was human ashes, — the product of half a century's combustion.

The Faculty having requested the class of '84 to appoint a committee to confer with them in regard to the graduating exercises, the class appointed their officers, Messrs. Rotch, Tyler and Heywood, to constitute the committee.

ERRATUM. — In the last issue, by a misprint, the signal service reports were made to cover *one hundred and twenty-two days* between Jan. 1 and April 1. This seeming impossibility disappears by reading December for January.

Noticeable Articles.

"Recent Progress in Dynamo Electric Machines," by Prof. S. B. Thompson, Journal of Society of Arts, March 7, 1884. Reprinted in Telegraphic Journal March 22 and 29, 1884.
C. R. C.

NINETEENTH CENTURY, April. "Wordsworth and Byron," by Algernon Charles Swinburne. "Those who, like the present writer, desire above all things to preserve in all things the golden mean of scrupulous moderation —" says Mr. Swinburne. This is the scrupulously moderate way in which he describes the improvement which Byron's poetry undergoes when it is translated into moderately good French or Italian prose. "The blundering, floundering, lumbering, and stumbling stanzas transmitted into prose and transfigured into grammar reveal the real and latent force of rhetorical energy that is in them; the gasping, ranting, wheezing, broken-winded verse has been transformed into really effective and fluent oratory." This is hardly scrupulously moderate; but I cannot help thinking him substantially in the right in his estimate of Byron. Mr. Swinburne, as a writer of prose, must be pronounced more vigorous than graceful. There are two sentences each twenty lines in length, and one of them requiring pretty careful attention to get at its meaning.

"The Prophet of San Francisco," by the Duke of Argyle.

A review of Mr. Henry George's sophistical book, "Progress and Poverty."

"Luther and Recent Criticism," by Principal Tulloch. This a new edition of Principal Tulloch's excellent book, "Luther and the Headers of the Reformation."

"Numbers; or, The Majority and the Remnant," by Matthew Arnold; one of Mr. Arnold's American lectures.

CONTEMPORARY REVIEW, April. "The Expansion of England," by Goldwin Smith. Compare this with John Morley's review of Prof. Seeley's interesting book, mentioned in a recent number, and read Prof. Goldwin Smith's own little book, "The Empire." The Canadian part of this article is extremely interesting.

NORTH AMERICAN REVIEW, May. "Matthew Arnold," by Edwin P. Whipple; a paper to which some readers will apply the epithet "smart," and others Mr. Arnold's own epithet, "philistinish." It maliciously exaggerates the shortcomings of its subject, but gives no adequate conception of his position as a poet and scholar.

"The Meaning of Song," by Helen Kindrick Johnson. Very interesting; gives amongst other things a curious account of the origin of "Yankee Doodle," "Tippecanoe and Tyler too," and "John Brown's Grave."

"Workingmen's Grievances," by Wm. G. Moody and Prof. J. L. Laughlin, of Harvard College. A growl from a "labor-reformer" answered by a writer who understands political economy.

FORTNIGHTLY REVIEW, April. "Homeric Troy," by Prof. Jebb. A new Trojan War seems to have broken out over the ruins of Troy.
W. P. A.

Department Notes.

Among the gifts lately received by the department of mechanical engineering is the fine mule presented by the Mason Machine Company of Taunton, Mass. The Lowell machine shop has given a speeder, a fly-frame, and a spinning-frame; the latter is furnished with four kinds of the latest pattern of spindles, and is adapted for spinning either warp or filling. The Whitin Machine Works have presented a top-flat card which is completely clothed and is provided with a coiler. The clothing was presented by Messrs. A. White & Son, of Leicester, Mass. Many of these machines were modified, at great trouble to the builders, in order to better adapt them to the available space and for convenience of exhibition to the students. These are among the most intricate machines in use, and their presence here will allow a much more careful study of their construction than would be possible in a mill where they were in actual operation.

There has lately been exhibited before the Essex Institute a new method of bleaching cotton cloth, as well as flax and wool, depending in its principle on some property of petroleum, the chemical action of which is not yet understood. That the product of petroleum does the bleaching, however, without injuring the fabric, and thereby doing away with the necessity of "filling" after the process, is certain, and a mill and water privilege has been purchased in Canton, in this State, where business under the patents already secured will be started within a few weeks under the superintendence of Mr. James L. Little, Jr., formerly of the Pacific Mills at Lawrence.

In the course of a speech at the annual dinner of the Institute of Civil Engineers of Great Britain, held in London, March 26, Sir Lyon Playfair, M. P., paid the Institute of Technology the following compliment, which we copy from the *American Machinist*: "In the technical school at Boston, there is not only the most complete equipment for persons intending to go into every art, — the mechanical arts, the chemi-

cal arts, and other arts connected with the industries of the country, — the laboratories are not only fully equipped, but the education is of the most complete character. They have not only schools of design, but they carry the design into engraving and wood cutting, and actually into the dyeing of the textile fabric. They are founding laboratories connected with the cotton trade, in which every scientific application with regard to cotton industry will be taught. They have machine shops of the most complete and equipped character. We have nothing in this country to compare with them."

The water-gas discussion has been ably summed up in an editorial in the *Mining and Engineering Journal* for April 26, which we advise all who can to read. It would seem that the gas is slightly more poisonous, but gives much better illumination and contains less of the objectionable marsh gas than the ordinary coal gas, and that its advantages far outweigh its objections. There would at least seem to be no need for its prohibition by statute.

The Guion steamer "Oregon" arrived at New York on April 19, having made the voyage from Queenstown in 6 days, 10 hours, and 30 minutes, which is 8 hours and 7 minutes better than the previous best time on record, — the "Alaska's." For three successive days an average speed of 470 miles a day, or nineteen and a half miles an hour, was maintained. In consideration of the time of the year when this passage was made, it may be expected that the record will be still further lowered.

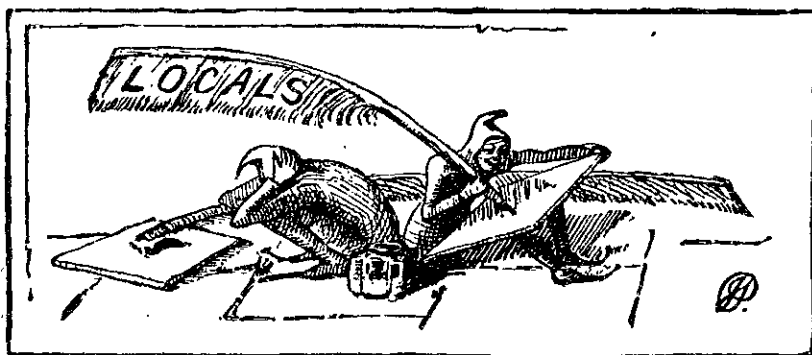
It is said that the hard coal burning engine now being tested on the Boston & Albany road is improving its record the more it is run, and is likely to be a success. The engine, which belongs to the Delaware & Hudson Canal Company, and runs on an express train, is large and handsome. It is two or three feet higher than the largest Boston & Albany engine, has a fire box ten feet deep, and uses six-foot driving wheels. The cab is about twice as large as an ordinary one, and four men ride in it. Its special beauty is its freedom from cinders and

The College World.

HARVARD. — It is whispered among the Harvard students that Dr. D. A. Sargent has asked Mr. T. J. Coolidge, president of the athletic association, to resign that office, on the ground that he (Mr. Coolidge) recently made a small bet on the result of a tug-of-war. — The editors of the *Lampoon* have informed the college that unless subscriptions due are paid up immediately the paper will be obliged to suspend publication. — *Era*. — The Sophomore class supper was a great success.

YALE. — The captain of the crew does not feel very sanguine of success at New London next summer. Among other troubles is a dissension among the members, which resulted in the retirement of Hyndeman, '84. Hyndeman's friends claim that his withdrawal was due to the influence of the Skull and Bones Society, which cares more for self-glorification than for the welfare of the college. — Attempts are being made to form a Freshman lacrosse team. — Profs. Loomes and Newton of the observatory have resigned on account of differences with Dr. Waldo, the head of the thermometrical bureau. — Prof. Northrop has resigned the chair of English Literature and accepted the presidency of the University of Minnesota.

PRINCETON. — Princeton has been invited to enter a cricket association with Columbia, the University of Pennsylvania, and others. — President McCosh has issued a circular to the parents of students at Princeton concerning the treatment and management of college students, and asking for opinions on the subject. — *Ex*. — The outlook for boating at Princeton is good this year, notwithstanding the proposal of last winter to abandon it entirely. The four-oared crew has been selected, and is being trained by Hosmer, the oarsman. — Three of the members of the American lacrosse team, which is to visit Europe this summer, were members of the Princeton team. Dr. Green represented Princeton at the celebration of the tercentenary of the University of Edinburgh and received the degree of D. D. on that occasion.



Be sure to go to the mass meeting next Saturday. For particulars, see editorial and bulletin board.

Now is the time to subscribe.

The chemical laboratories close next Saturday.

The Glee Club concert was a success financially.

Work on the demolition of the old workshops has been begun.

The architects are working on their last problem for the year.

The Seniors take their last examination in "what not" on the 21st.

Mr. Gustin, '83, is back at the Institute, at work in the mining laboratory.

Cæsar was a man of tact, for he conquered the Nervii and got the best of the men of Gaul.

Students going West after the examinations are making arrangements to hire a special car.

Messrs. Randall, Elzner, and Perkins, special architects, are going into Mr. Richardson's office.

The base-ball nine won its first game of the season on Wednesday last. M. I. T., 13; Tufts, 8.

Several of the architects have been out of town sketching with Mr. Turner, during the fine weather.

The treasurer wishes us to remind those who have not yet paid their subscriptions that now is the time.

The class in mineralogy are to have an excursion to the mineral localities of Oxford County, Maine, after the annual examinations.

The class of '86 has very generously furnished the two prize flags to be contested for by the different companies at the prize drill next Saturday.

The lists of the annual examinations have

been posted. Sorrowfully does the Fresh. note down the date of chemistry and the Soph. that of physics.

The Seniors, the architects, and the Freshmen have been photographed *en masse* recently. We should be pleased to receive a copy of each for THE TECH office.

Member of bicycle club. Can you show me some bicycle stockings?

Young lady clerk. Ladies' or gentlemen's?

Member of bicycle club. Ladies', of course.

Prof. Atkinson has placed the "Nineteenth Century" and other prominent English magazines on file in the library. Books can be taken from the library by students on application to Prof. Atkinson or Mr. Wheelock.

Fred M. Kimball, '85, has deservedly won a great deal of praise for the very efficient manner in which he has planned and supervised the work at the new station of the Merchants' Electric Light and Power Company of this city.

In connection with their meeting of April 30, a number of the cotton manufacturers inspected the recent additions to the Institute, the new building and improved laboratories and the shops, where drawings of the work required and pieces made from them were examined with interest.

At a recent meeting of the Colorado Scientific Society, Mr. A. H. Low ('76) read a paper on a new modification of the battery method for the estimation of copper, by which great accuracy is obtained in from one to two hours. A full description of the process will soon appear.

The third regular meeting of the Society of the class of '87 was held at Young's last Friday evening, when some very fine musical selections were rendered by Messrs. Shepard, Bullard, Steele, Thompson, Barron, and Manning, and an interesting paper on "College life in India" was read by Mr. K. M. Bhat.

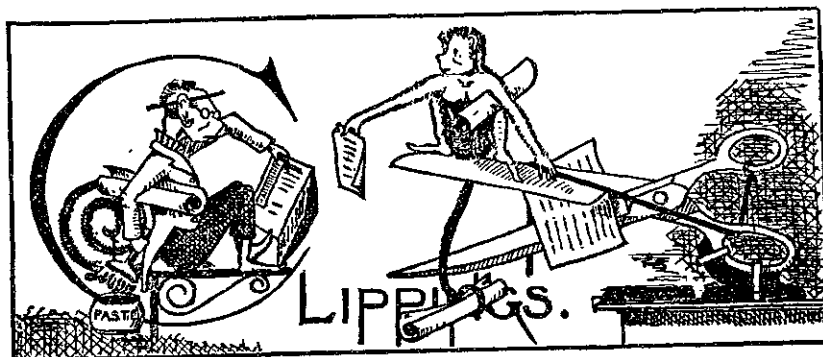
The opening of the new laboratory of photography seems to have roused us to a strong interest in that art. In addition to those at the shops, group photographs have been taken (not by home artists, however) of the Society of '87, the Seniors, the architects, and the class of '85, with indications of more to follow.

The concert of the Glee Club, on the 23d of April, was a decided success. The singing of the club showed a marked improvement over that of their first concert last winter. Mr. Kreps's yodelling was, as before, one of the hits of the evening, while all the numbers were well received. We think, however, that the concert would have been more appreciated by the Institute portion of the audience if there had been more singing by the Glee Club and less by outside talent.

Another event in the history of '85, which will be pleasantly remembered by all participants, took place on Saturday, May 3, — the planting of a class tree. At noon a business meeting was held, during which it was announced that the tree, a promising elm sapling, had been presented by the city; the meeting closed with a hymn and collection and adjourned to the back steps of the new building, where the class picture was taken. Then '85 marched to the selected campus, among the sidewalk and lamp post in front of the Rogers building; here the forest was steadied in place, and as the first shovelful of earth fell upon its roots a ringing cheer rent the air, followed by the bursting of threescore paper bags; after joining hands and dancing about the object of admiration, a song, carefully adapted, was sung, and with another cheer the services ended. Let us hope that the tree will grow and flourish, and strong and thriving, be a symbol of hopes fulfilled and expectations realized in the lives of those who planted it.

THE AGONY OF A JUNIOR
Muse of Technic serewepart
Inspire oncemore my fearful heart
Help me over this demnition
Grind before examination.

The Greek letter fraternity, Sigma Chi, has been suppressed at Wesleyan, and the Faculty has forbidden the badge of this society to appear again in that institution. — Wesleyan has decided to send a crew to the intercollegiate regatta at Saratoga, July 4th. — Dartmouth is to have a law school — It is rumored that a new college paper will be started at Lehigh.



Between the Acts.

HE.

I WISH to speak with Tom, dear,
About the great campaign,
And when the curtain rises, love,
I'll sure be back again.

SHE.

Be sure and eat some cloves, love,
With the friend you're going to see;
For wherever there's a Tom, sweet,
A Jerry's sure to be.

Lehigh Burr.

A pretty miss,
A stolen kiss,
A pressure of the hand,
A loving heart,
And then you part,
None happier in the land.

Next comes the ring —
The proper thing;
But then, quite out of place,
There comes some phrase enough to raise
A breach-of-promise case.

H. A. L.

Well up in her mythology.

Tommy. "Madge, what's 'Necessitas,' masculine or feminine?"

Madge. "Why, feminine, of course!"

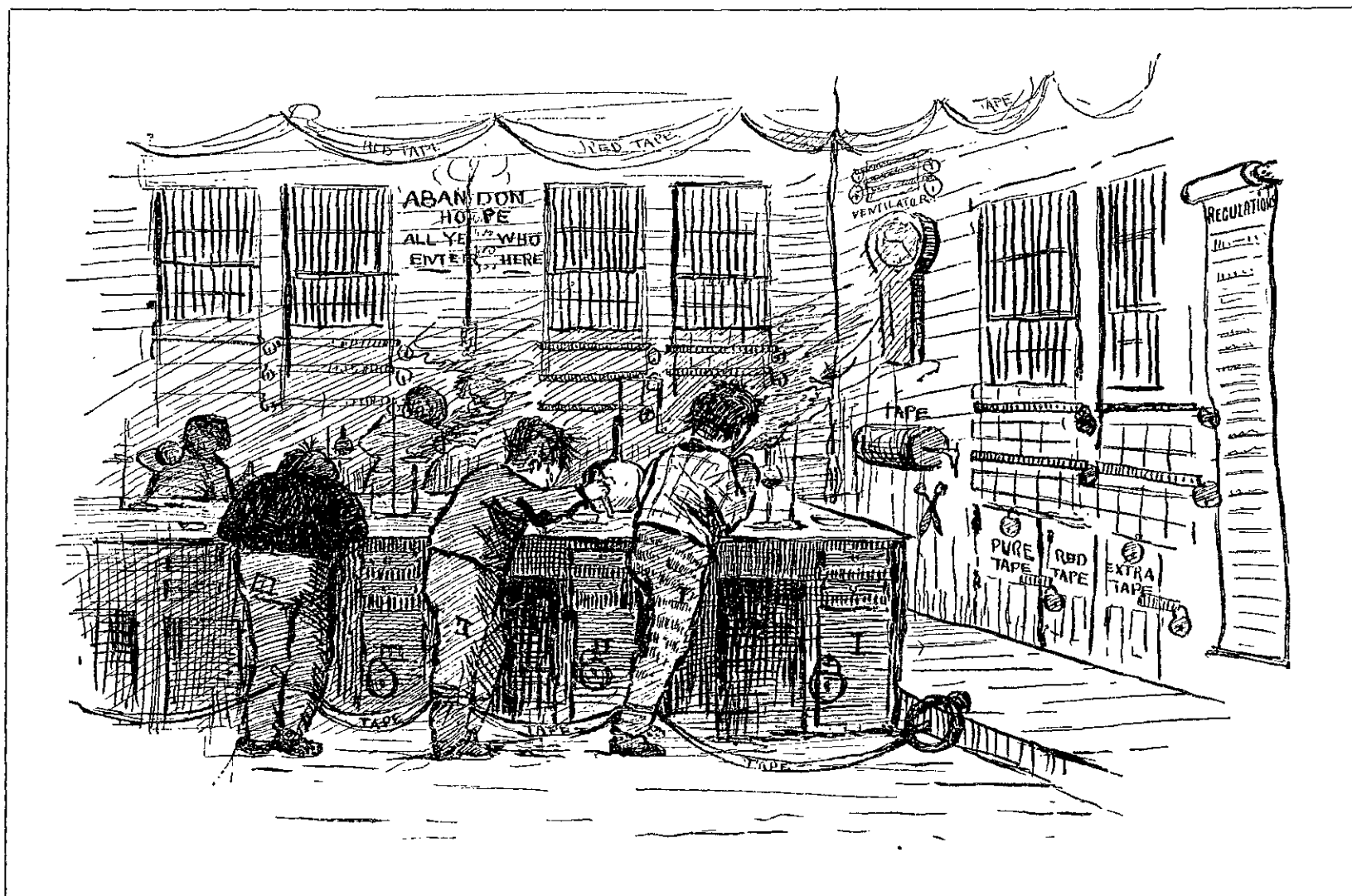
Tommy. "Why?"

Madge. "Why, she was the mother of invention." — *Punch.*

"Man wants but little ear below, nor wants that little long," murmured the dude, as he carefully cut out places for his aural appendages in his new three-inch collar. — *Life.*

The small boy who hangs around the parlor and makes faces at his sister's beau should be punished for contempt of court — *Yule News.*

Off on a toot, — a strolling street band.



*"From early morn till dewy eve
Do these poor spirits toil and grieve,
Alas! unhappy fate."*

Bar-keeper. Dot vine vas hard to beat.

Free-lunch Irishman (soto voce). Unless ye had a club.

Bar-keeper. Oh, if you had a club, dot vas different. You mide beat dot vine at a club. — *Spectator.*

A Game of Cribbage: Translating German with the aid of a "horse."

A man in De Pawn Univesity spent \$225.53 in his Freshman year, and was expelled for extravagance. — *Yale Record.*

At De Pawn University the college dude is a full-blooded Indian. — *Yale Record.*

What has the *Record* against De Pawn University?

You are the closest girl I ever saw, he remarked to his best girl the other evening.

Fresh tells a joke; Soph don't *tumble*: so Fresh has to *stand* it.

"And this, I suppose, is what they call the heyday of youth," said the farmer's son as he sweated away at his mowing. — *Lampoon.*

First be-lated Sportsman: Is that the sun or the moon rising over the hill?

Second B. S. (perplexed): Really, can't say: I'm a stranger hereabouts. — *Lampoon.*

The "Flying Yankee" train on the Eastern Railroad made very good time on a run last week. Leaving Portland at 6.15 P. M., it reached Somerville at 9.20, thus making the 107 miles in 185 minutes. Fifteen stops were made, which consumed over an hour; the actual running time being two hours, or an averave of $53\frac{1}{2}$ miles an hour.

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Washington Street.

The trip to Fitchburg last Saturday was a great success, and heartily enjoyed by those who were able to go. Mr. Ingalls, '86, thinks he bagged the best mineral treasure.

We think very much of these trips. The student learns vastly more from a practical handling of the subject than he is aware of; and to *see* the formations that he has read and studied about is "confirmation sure."

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The 2 G Society sat down to a very nice dinner at Young's on Saturday, April 26. About sixteen members were present, and under the "interlocution" of Mr. F. B. Richards, several good speeches were made. The occasion was somewhat saddened, however, by the fact that the society is about to lose the members from '84, who now go forth to seek their fortunes in the world.

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Besides the above distinctly professional courses, the Institute offers scientific courses of a less technical character, designed to give students a preparation for business callings. A four-years' course in biology, chemistry, and physics has been established, as preparatory to the professional study of medicine.

Modern languages are taught so far as is needed for the ready and accurate reading of scientific works and periodicals, and may be further pursued as a means of general training.

The constitutional and political history of England and the United States, political economy, and international law are taught, in a measure, to the students of all regular courses.

Applicants for admission to the Institute are examined in English grammar, geography, French, arithmetic, algebra, and geometry. A fuller statement of the requirements for admission will be found in the catalogue, which will be sent without charge on application.

A clear admission paper from any college of recognized character will be accepted as evidence of preparation, in place of an examination.

Graduates of colleges conferring degrees are presumed to have the necessary qualifications for entering the third-year class in any of the regular courses of the Institute, and will be so admitted provisionally, on the presentation of their diplomas.

The feature of instruction which has been most largely developed in the school is laboratory training, shop-work and field practice, to supplement, to illustrate, and to emphasize the instruction of the recitation and lecture room.

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On the successful completion of any one of the four-year courses of the Institute, a degree of bachelor of science will be conferred. The Institute is also empowered to confer the degree of doctor of science. Special students are allowed to enter special divisions of any of the courses, on giving evidence that they are prepared to pursue with advantage the studies selected.

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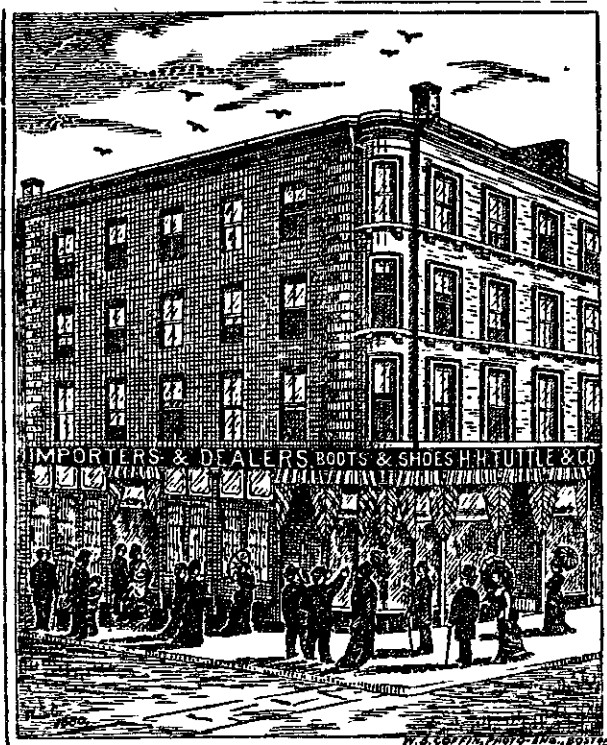


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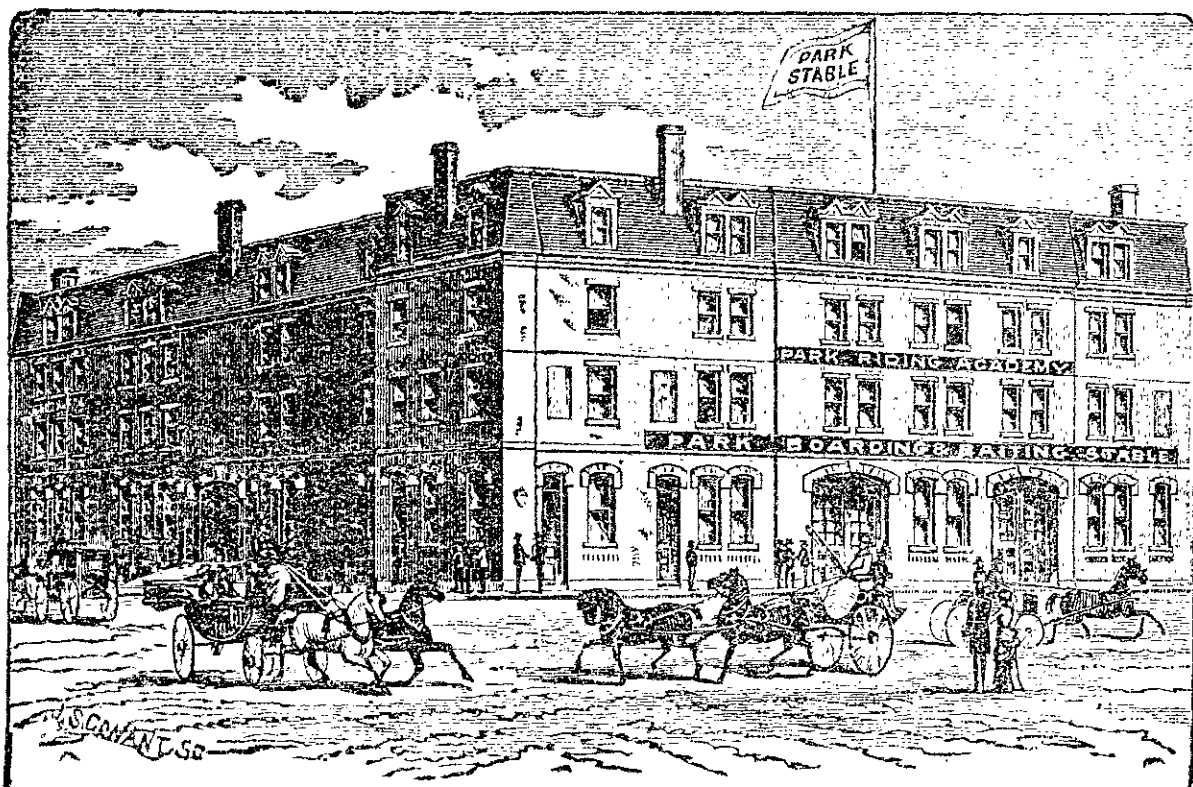
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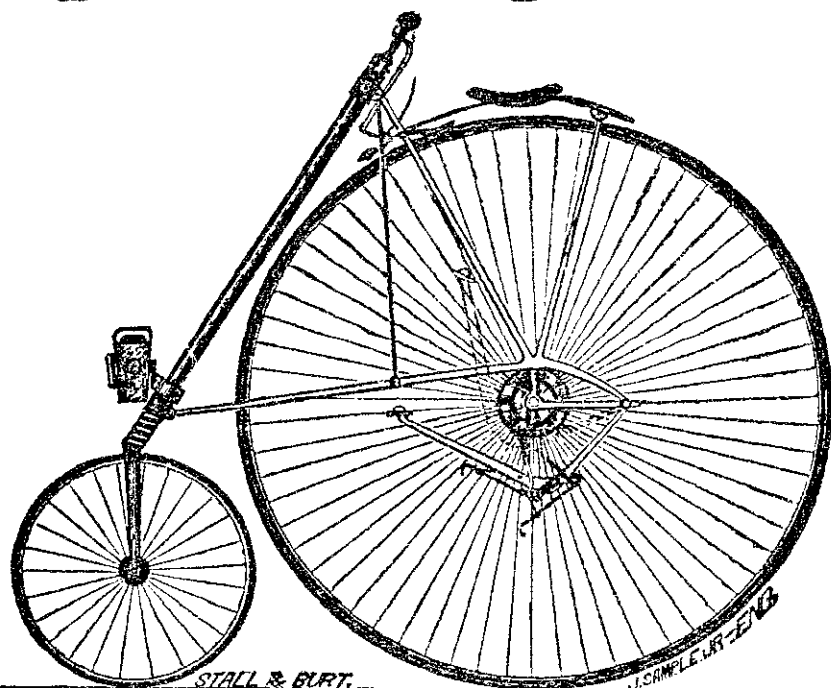
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